

WHAT IS CLAIMED IS:

1. A method for facilitating the design and assignment of Ethernet VLANs, said method comprising:

receiving a VLAN name, a class of service and two or more access ports;

determining switches and trunks associated with said access ports;

searching a VLAN database for said VLAN;

creating a VLAN if said searching does not result in locating said VLAN,

wherein said creating includes:

selecting a starting access port from said two or more access ports;

mapping a base path from said starting access port to another of said access ports, wherein said base path includes one or more of said switches and one or more of said trunks; and

adding said base path to said VLAN including said starting access port and said another of said access ports;

for each said two or more access ports not currently located in the VLAN:

mapping a new path from said access port to one of said switches in said VLAN; and

adding said new path to said VLAN including said access port; and transmitting said VLAN to said VLAN database.

2. The method of claim 1 wherein said mapping a base path includes:

selecting a pre-selected number of said two or more access ports;

creating a list of least cost paths from said starting access port to each of said selected access ports, wherein each said path includes one or more of said switches and one or more of said trunks; and

selecting a longest length path from said list for said base path.

3. The method of claim 2 wherein said pre-selected number is four.

4. The method of claim 2 wherein each said two or more access ports includes a corresponding bandwidth requirement and said mapping a base path further includes:

determining if each said least cost path in said list has capacity for said bandwidth requirement corresponding to said another of said access ports; and  
deleting a least cost path from said list in response to said least cost path not having capacity.

5. The method of claim 4 wherein said determining includes receiving capacity data from an operational support system.

6. The method of claim 2 wherein each said two or more access ports includes a corresponding bandwidth requirement and said mapping a base path further includes:

determining if each said least cost path in said list has capacity for said bandwidth requirement corresponding to said another of said access ports in said class of service; and  
deleting a least cost path from said list in response to said least cost path not having capacity.

7. The method of claim 6 wherein said determining includes receiving capacity data from an operational support system.

8. The method of claim 1 wherein said mapping a new path includes:  
creating a list of one or more least cost paths from said access port to one of said switches located in said VLAN;  
selecting the shortest length path from said list for said new path, wherein if there is more than one shortest length path then selecting the one resulting in a lowest total hub value for the VLAN for said new path.

9. The method of claim 8 wherein each said two or more access ports includes a corresponding bandwidth requirement and said mapping a new path further includes:

determining if each said least cost path in said list has capacity for said bandwidth requirement corresponding to said access port; and

deleting a least cost path from said list in response to said least cost path not having capacity.

10. The method of claim 9 wherein said determining includes receiving capacity data from an operational support system.

11. The method of claim 8 wherein calculating said total hub value includes:

creating a list of least cost paths from each said switch in said shortest length path to each said switch in said VLAN; and

calculating a total bandwidth transport required by said list of least cost paths, wherein said total bandwidth transport required is said total hub value.

12. The method of claim 8 wherein each said two or more access ports includes a corresponding bandwidth requirement and said mapping a new path further includes:

determining if each said least cost path in said list has capacity for said bandwidth requirement corresponding to said access port in said class of service; and

deleting a least cost path from said list in response to said least cost path not having capacity.

13. The method of claim 12 wherein said determining includes receiving capacity data from an operational support system.

14. The method of claim 1 wherein said base path is a least cost path.

15. The method of claim 1 wherein said new path is a least cost path.

16. The method of claim 1 further comprising receiving a hub switch and wherein each said one or more access ports are mapped to said hub switch.

17. The method of claim 1 wherein said trunks associated with said access ports include a relative cost value.

18. The method of claim 1 wherein said VLAN database includes a VLAN name field, VLAN trunk fields, VLAN switch fields and VLAN access port fields for each said VLAN.

19. A system for facilitating the design and assignment of Ethernet VLANs, the system comprising:

- a network of switches and connecting trunks;
- a storage device in communication with said network, wherein said storage device includes a VLAN database;
- a user system in communication with said network; and
- a host system in communication with said network, said host system including application software to implement a method comprising:
  - receiving a VLAN name via said network, a class of service and two or more access ports;
  - determining switches and trunks associated with said access ports;
  - searching said VLAN database for said VLAN;
  - creating a VLAN if said searching does not result in locating said VLAN, wherein said creating includes:
    - selecting a starting access port from said two or more access ports;
    - mapping a base path from said starting access port to another of said access ports, wherein said base path includes one or more of said switches and one or more of said trunks; and
    - adding said base path to said VLAN including said starting access port and said another of said access ports;
  - for each said two or more access ports not currently located in the VLAN:
    - mapping a new path from said access port to one of said switches in said VLAN; and
    - adding said new path to said VLAN including said access port;
  - and
  - transmitting said VLAN to said VLAN database.

20. The system of claim 19 wherein said network is the Internet.

21. The system of claim 19 wherein said network is an intranet.

22. The system of claim 19 wherein said VLAN database is a relational database.

23. A computer program product for facilitating the design and assignment of Ethernet VLANs, the computer program product comprising:

a storage medium readable by a processing circuit and storing instructions for execution by the processing circuit for facilitating a method comprising:

receiving a VLAN name, a class of service and two or more access ports;

determining switches and trunks associated with said access ports;

searching a VLAN database for said VLAN;

creating a VLAN if said searching does not result in locating said VLAN, wherein said creating includes:

selecting a starting access port from said two or more access ports;

mapping a base path from said starting access port to another of said access ports, wherein said base path includes one or more of said switches and one or more of said trunks; and

adding said base path to said VLAN including said starting access port and said another of said access ports;

for each said two or more access ports not currently located in the VLAN:

mapping a new path from said access port to one of said switches in said VLAN; and

adding said new path to said VLAN including said access port;

and

transmitting said VLAN to said VLAN database.